What is claimed is:

1. A Layer 2 switching device which is connected to first and second hosts belonging to different LAN segments and to a router serving as a default gateway for the first and second hosts and forwards data to be transferred between the first and second hosts, comprising:

a flow table in which an entry is registered, the entry including an IP address of one host selected from the first and second hosts as a source IP address thereof and MAC and IP addresses of the other host as destination MAC and IP addresses thereof;

a converter that, in the case where data having the IP address of the one host set as the source IP address thereof and having the IP address of the other host set as the destination IP address thereof is received from the one host, converts the destination MAC address set in the data into the MAC address of the other host based on the entry in the flow table; and

a unit that sends out the data, which has the destination MAC address converted, to the other host.

2. The Layer 2 switching device according to claim 1, further comprising a flow table learning unit that, in the case where data having the IP address of the one host selected from the first and second hosts set as the source IP address thereof and having the MAC and IP addresses of the other host set as the MAC and destination IP addresses thereof is received

via the router and sent to the other host, creates the entry
including the source IP address and the MAC and destination
IP addresses which are set in the data to register the entry
in the flow table.

3. The Layer 2 switching device according to Claim 1,
further comprising:

an address table learning unit that, in the case where
data to be transferred from the one host selected from the
first and second hosts to the other host is received, registers
an entry in an address table, the entry including a source
MAC address and the destination IP address which are set in
the data; and

a flow table learning unit that:

in the case where the data to be transferred from
the one host to the other host is received via the router and
sent to the other host, searches the address table by using
the destination IP address in the data as a search key; and

when the MAC address included in a retrieved entry
coincides with the destination MAC address in the data, creates
an entry including the source IP address and the MAC and
destination IP addresses which are set in the data to register
the entry in the flow table.

4. The Layer 2 switching device according to claim 1,
wherein the source MAC address set in the data is converted
into a MAC address of the router corresponding to the segment

to which the other host belongs.

5. The Layer 2 switching device according to claim 2, wherein the flow table learning unit creates the entry for only each of ports to be connected to the first and second hosts.

6. The Layer 2 switching device according to claim 1, further comprising a deletion unit that, in the case where a predetermined time has elapsed since an entry was newly registered or last updated in the flow table, deletes the entry.

7. The Layer 2 switching device according to claim 1, wherein the Layer 2 switching device forwards a particular kind of data within the data to be transferred from the one host selected from the first and second hosts to the other host, to the router, without a process performed by the converter.

8. A data exchange method using a Layer 2 switching device which is connected to first and second hosts belonging to different LAN segments and to a router serving as a default gateway for the first and second hosts and relays data to be transferred between the first and second hosts, the method comprising:

registering in a flow table an entry including an IP address of one host selected from the first and second hosts as a source IP address thereof and MAC and IP addresses of

the other host as MAC and destination IP addresses thereof;

converting, in the case where data having the IP address of the one host set as the source IP address thereof and having the IP address of the other host set as the destination IP address thereof is received from the one host, the destination MAC address set in the data into the MAC address of the other host based on the entry in the flow table; and

sending out the data, which has the destination MAC address converted, to the other host.

9. The data exchange method using a Layer 2 switching device according to claim 8, further comprising, creating, in the case where data having the IP address of the one host selected from the first and second hosts set as the source IP address thereof and having the MAC and IP addresses of the other host set as the MAC and destination IP addresses thereof is received via the router and sent to the other host, the entry including the source IP address and the MAC and destination IP addresses which are set in the data to register the entry in the flow table.

10. The data exchange method using a Layer 2 switching device according to claim 8, further comprising:

registering, in the case where data to be transferred from the one host selected from the first and second hosts to the other host is received, in an address table an entry including a source MAC address and the destination IP address

which are set in the data;

searching, in the case where the data to be transferred from the one host to the other host is received via the router and sent to the other host, the address table by using the destination IP address in the data as a search key; and

creating, when the MAC address contained in a retrieved entry coincides with the destination MAC address in the data, an entry including the source IP address and the MAC and destination IP addresses which are set in the data to register the entry in the flow table.

11. The data exchange method using a Layer 2 switching device according to claim 8, in which the source MAC address set in the data is converted into a MAC address of the router corresponding to the segment to which the other host belongs.

12. The data exchange method using a Layer 2 switching device according to claim 9, in which the entry to be registered in the flow table is created for only each of ports to be connected to the first and second hosts.

13. The data exchange method using a Layer 2 switching device according to claim 8, further comprising, deleting, in the case where a predetermined time has elapsed since an entry was newly registered or last updated in the flow table, the entry.

14. The data exchange method using a Layer 2 switching device according to 8, forwarding a particular kind of data within the data to be transferred from the one host selected from the first and second hosts to the other host, to the router, without performing a converting process of MAC address.